

**TWO NEW SPECIES OF *HYDROMETRA* LATREILLE
(HETEROPTERA: HYDROMETRIDAE) FROM THAILAND**

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Abstract.—The water measurers *Hydrometra chaweewanae* Sites and Polhemus and *Hydrometra akekawati* Sites and Polhemus are described and illustrated. Specimens of both species were collected among emergent vegetation in an anthropogenic pond in Chaiyaphum Province, north-central Thailand. This brings the number of described species of the genus in Thailand to 10.

Key Words: Insecta, Hydrometridae, water measurer, *Hydrometra*, new species, Thailand

Hydrometrids, or water measurers, typically occur on the surface of still water and floating debris among emergent, marginal vegetation in either lotic or lentic systems. They seldom venture into open water or onto banks except when disturbed, and are weakly predaceous, feeding on dead or dying organisms. The ecology and morphology of Hydrometridae was summarized by Andersen (1982).

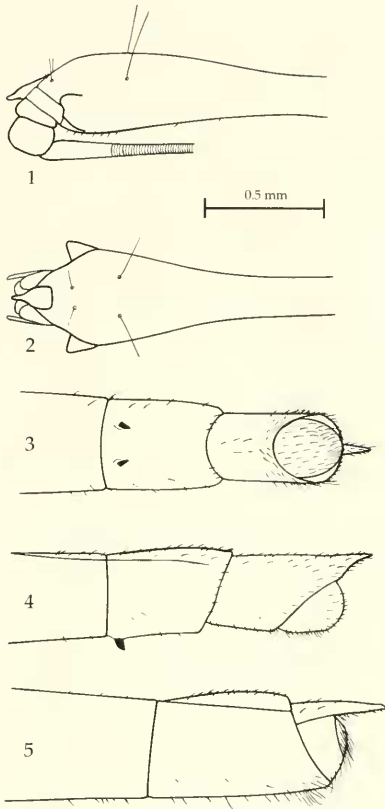
The Southeast Asian fauna of *Hydrometra* Latreille was revised by Lundblad (1933) and Hungerford and Evans (1934), following which appeared numerous descriptions of new species scattered throughout the literature. Subsequently, Polhemus and Polhemus (1995) revised the genus for Indochina and the Malay Archipelago, and Polhemus and Lansbury (1997) for Australia, Melanesia, and the southwestern Pacific. The fauna of Indochina and the western Malay Archipelago includes 18 described species of *Hydrometra* (Hungerford and Matsuda 1961, Polhemus and Polhemus 1995), of which 13 are known from the mainland of Indochina. Specifically, the

known fauna of *Hydrometra* of Thailand includes eight described species (Zettel and Chen 1996). Presented here are descriptions of two new species from north-central Thailand, bringing the known fauna of *Hydrometra* of Thailand to ten.

METHODS

Collecting was conducted in cooperation with the Faculty of Forestry, Kasetsart University, Bangkok, and with permission of the Royal Forestry Department, Bangkok, Thailand. All measurements are expressed as mm. Because a sufficient number of female specimens were available, length and width are given as a mean and range. For the males, only a range is given. Measurements were taken as described by Polhemus and Polhemus (1995). Body width immediately posterior to the procoxal acetabulae is best observed and measured in ventral view.

The male holotypes are deposited in the Enns Entomology Museum, University of Missouri–Columbia (UMC). Paratypes are deposited in the insect collection of UMC, the Royal Thai Forestry Department, Bang-



Figs. 1-5. *Hydrometra chaweewanae*. 1, Lateral aspect of anterior portion of head. 2, Dorsal aspect of anterior portion of head. 3, Ventral aspect of terminal abdominal segments of male. 4, Lateral aspect of terminal abdominal segments of male. 5, Lateral aspect of terminal abdominal segments of female.

kok, and the J. T. Polhemus Collection, eventually to the Smithsonian Institution, Washington, D.C.

Hydrometra chaweewanae
Sites and Polhemus, new species
(Figs. 1-5)

Micropterous male ($n = 2$).—Length: 7.88-7.97. Width: 0.36-0.40.

Color and texture: Ground color medium brown dorsally, light brown ventrally. Eyes red, maxillary plates white. Head behind eyes and nota with light brown longitudinal stripe on midline. Legs light brown becoming darker brown distally. Femora light brown with medium brown apices. Dorsolateral sinuate light brown stripe on pronotum above dorsal ends of pro- and mesothoracic pleural sutures. Abdominal tergites I-VII light brown. Connexiva with dark brown lateral and mesal margins. Broad longitudinal medium brown stripe below level of spiracles on abdominal sterna I-VII. Tergum VIII and genital operculum clothed with fine pubescence. Abdominal terga I-VI and sterna I-VIII shining. Otherwise, mostly pruinose throughout.

Structure: Head long (2.54), widest at antennal tubercles (0.36). Ventral surface with short, bristlelike, black setae, especially noticeable anteriorly. Maxillary plate subrectangular and not extending anteriorly past anteclypeus and gular lobe. Gular lobe with outer margin rounded, covering base of rostrum (Fig. 1). Rostrum reaching posteriorly to midway between eyes and prosternum. Ratio of antecocular/postocular portions of head (2:1). Ratio of interocular distance to width of compound eye (4:7). Anteclypeus broadly triangular and markedly acuminate anteriorly (Fig. 2). Antennal length ratio I:II:III:IV, 16, 44, 110, 31. Prothorax with row of small pits delimiting collar. Pronotal length 1.08, remainder of thorax 0.96. Abdominal length 3.73. Short, bristlelike, black setae on pro- and mesosternum, becoming sparse except for laterally on metasternum, continuing laterally on abdominal sterna. Intra-segmental distance between coxae: pro- (0.04), meso- (0.06), meta- (0.14). Intersegmental distance between pro- and mesocoxae 0.48, between meso- and metacoxae 0.92. One puncture anterior and posterior to pleural suture on pro- and mesothorax and one puncture on metaepisternum. Paired posteriorly recurved, black, sclerotized hooks

near anterior margin of sternite VII (Figs. 3–4).

Micropterous female ($n = 7$).—Length: $\bar{x} = 8.74$, range = 8.30–8.80. Width: $\bar{x} = 0.41$, range = 0.38–0.42.

Similar to male in most respects but with following differences: Metasternum and abdominal sterna with midventral, longitudinal brown stripe, faint anteriorly, becoming more pronounced posteriorly, abruptly pronounced on sternite VII. Abdominal terminalia as in Fig. 5. Tergum VII convex, raised slightly posteriorly. Body of tergite VIII about as long as wide and with pointed apical process. Apical process of tergite VIII slightly deflexed at apex. Tergites VII and VIII with short, recumbent setae.

Macropterous form.—Unknown

Brachypterous form.—Unknown

Type material.—Holotype, micropterous ♂: THAILAND: Chaiyaphum Prov., Amphur Khon Sam Tumbon Heuy Yang, pond, 2 July 1998, L-228, Vitheepradit & Sawangsak. Paratypes, micropterous: same data as holotype, 2 ♂, 11 ♀.

Additional material examined.—THAILAND: Phang Nga Prov., lake at Samanora Park, 3 km E of Muang District, 13 July 1997, Sites & Permkam, L-141, 1 ♂ (UMC); Songkhla Prov., Hat Yai, PSU campus, 5 January 1995, pond, Sites & Nichols, 1 ♀ (UMC).

Etymology.—This species is named after Dr. Chaweewan Hutachareern, Royal Forestry Department, Bangkok, an alumna of the University of Missouri. On numerous occasions, including for this project, she provided valuable advice for field work and assistance with logistics in Thailand.

Diagnosis.—This species is recognizable in both sexes by the acuminate process at the anterior tip of the anteclypeus. Males have a pair of posteriorly recurved, black, sclerotized hooks near the anterior margin of sternite VII.

Comparative notes.—In this region, males of *H. chaweewanae* most closely resemble those of *H. annamana* Hungerford and Evans, *H. carinata* Polhemus and Pol-

hemus, and *H. cracens* Polhemus and Polhemus because the recurved, black, sclerotized hooks near the anterior margin of sternite VII superficially resemble the brush of hairs possessed by these species. The males of *H. chaweewanae* more closely resemble males of *H. akekawati* (see description below), but the size and shape of the recurved black hooks are distinct from the black-tipped prongs of the latter. The highly acuminate anteclypeus of both sexes of *H. chaweewanae* will distinguish this species from all other described species in the region. In the key to the species of *Hydrometra* of Indochina and western Malay Archipelago (Polhemus and Polhemus 1995), *H. chaweewanae* will key to couplet 11.

Distribution.—This species was collected at the type locality in north-central Thailand, and in southern Thailand in Phang Nga and Songkhla provinces.

Discussion.—The type locality was a quadrate, apparently anthropogenic pond adjacent to a small gas station and may be viewed in a Locality Image Database via a link from the Enns Entomology Museum web site. The pond was situated between a highway and corn field. The perimeter of the pond was heavily vegetated with emergent and submergent vegetation. This species was collected with five congeners: *H. annamana* Hungerford and Evans, *H. carinata* Polhemus and Polhemus, *H. greeni* Kirkaldy, *H. orientalis* Lundblad, and *H. akekawati* described below.

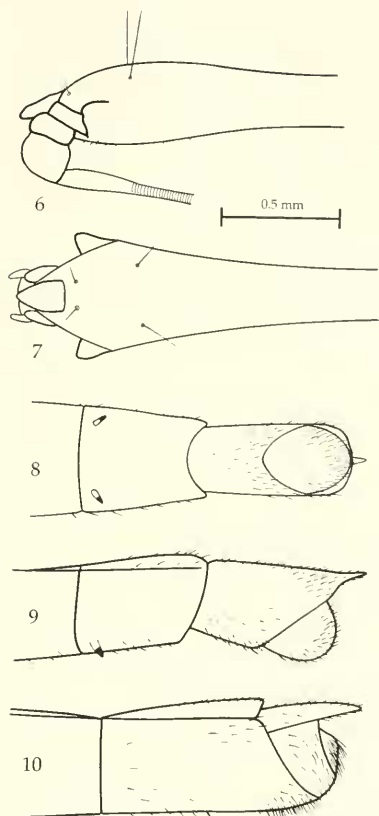
Hydrometra akekawati

Sites and Polhemus, new species

(Figs. 6–10)

Micropterous male.—($n = 3$): Length: 8.30–8.72. Width: 0.42–0.44.

Color and texture: Ground color dorsally medium brown, ventrally head and genital operculum medium brown, thorax and abdomen light brown. Eyes red, maxillary plates white. Pronotum with narrow light brown median longitudinal stripe, metanotum with broad light brown median band. Legs mostly light brown. Femora



Figs. 6-10. *Hydrometra akekawati*. 6. Lateral aspect of anterior portion of head. 7. Dorsal aspect of anterior portion of head. 8. Ventral aspect of terminal abdominal segments of male. 9. Lateral aspect of terminal abdominal segments of male. 10. Lateral aspect of terminal abdominal segments of female.

and tibiae light brown with medium brown apices. Tarsi medium brown. Dorsolateral sinuate light brown stripe on pronotum above dorsal ends of pro- and mesothoracic pleural sutures. Mesothoracic wing extending posteriorly to level of anterior end of connexiva. Abdominal tergum light brown, darker anteriorly and

posteriorly. Connexiva medium brown with dark brown lateral and mesal margins. Longitudinal medium brown stripe ventrad of level of spiracles on abdominal sterna I-VII. Terga VII, VIII, and genital operculum clothed with dark brown recumbent setae. Abdominal terga I-VI shining. Otherwise, mostly pruinose throughout dorsally and ventrally.

Structure: Head long (2.54), widest at antennal tubercles (0.37). Ventral surface with short, bristlelike, dark brown setae. Maxillary plate subrectangular and not extending anteriorly past anteclypeus and gular lobe (Fig. 6). Gular lobe with outer margin rounded, covering base of rostrum (Fig. 6). Rostrum reaching posteriorly to $\frac{3}{4}$ distance between compound eye and prosternum, nearly reaching anterior end of prothoracic trochanter. Ratio of antecocular/postocular portions of head (1.9:1). Ratio of interocular distance to width of compound eye (5:8). Anteclypeus elongate, conical, with sides slightly convex and apex narrowly rounded (Fig. 7). Antennal length ratio I:II:III:IV, 21, 45, 116, 75. Prothorax with coarse punctures delimiting collar and throughout posterior half. Pronotal length 1.24, remainder of thorax 0.76. Abdominal length 4.55. Short, bristlelike, dark brown setae on head, thorax, and abdomen. Intra-segmental distance between coxae: pro- (0.06), meso- (0.10), meta- (0.18). Intersegmental distance between pro- and mesocoxae 0.56, between meso- and metacoxae 0.96. Thoracic pleura punctate; generally, one to three punctures anterior and four posterior to pleural suture 1, three each anterior and posterior to pleural suture 2, one on metaepisternum and row of three to five at anterior margin of mesepisternum. Paired, posteriorly directed, black-tipped, sclerotized prongs near anterior margin of sternite VII (Figs. 8, 9).

Micropterous female.—(n = 7): Length: \bar{y} = 9.44, range = 9.30-9.71. Width: \bar{y} = 0.48, range = 0.44-0.52.

Similar to male in most respects but with following differences: Abdominal termina-

lia as in Fig. 10. Body of tergum VIII medium brown, pubescent, about as long as wide, and with dark brown pointed apical process subequal in length. Apical process of tergite VIII slightly angled upward throughout its length. Dorsal margin of tergum VIII straight when viewed laterally.

Macropterous form.—Unknown

Brachypterous form.—Unknown

Type material.—Holotype, micropterous ♂: THAILAND: Chaityaphum Province, Amphur Khon Sarn Tumbon Heuy Yang, pond, 2 July 1998, L-228, Vitheepradit & Sawangsak. Paratypes, micropterous: same data as holotype, 3 ♂, 7 ♀.

Etymology.—This species is named after Mr. Akekawat Vitheepradit, University of Missouri, who collected this species as a component of his masters thesis research.

Diagnosis.—This species is recognizable in males by a pair of posteriorly directed, black-tipped, sclerotized prongs near the anterior margin of sternite VII. Both sexes have an elongate, conical anteclypeus with slightly convex sides and narrowly rounded apex, and a punctate pronotum with many punctures on the pro- and mesothoracic pleura.

Comparative notes.—In this region, males of *H. akekawati* most closely resemble those of *H. annamana*, *H. carinata* and *H. cracens* because the posteriorly directed, black-tipped, sclerotized prongs near the anterior margin of sternite VII superficially resemble the brush of hairs possessed by these three species. The males of *H. akekawati* more closely resemble males of *H. chaweewanae*, but the size and shape of the black-tipped prongs are distinct from the recurved black hooks. In the key to the species of *Hydrometra* of Indochina and western Malay Archipelago (Polhemus and Polhemus 1995), *H. akekawati* will key to couplet 11.

Distribution.—This species was collected only at the type locality.

Discussion.—The type locality was a quadrate, apparently anthropogenic pond adjacent to a small gas station and may be

viewed in an Image Database via a link from the Enns Entomology Museum web site. The pond was situated between a highway and corn field. The perimeter of the pond was heavily vegetated with emergent and submergent vegetation. This species was collected with five congeners: *H. annamana*, *H. carinata*, *H. chaweewanae*, *H. greeni*, *H. orientalis*.

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